

CLAIMS

What is claimed is:

1. A system for wireless communication and sensory monitoring comprising:
 - a plurality of nodes installed as a network, each of the plurality of nodes comprising:
 - an internode transceiver for wireless communication between nodes;
 - a wireless network transceiver for wireless communication with one or more wireless devices;
 - one or more sensors for monitoring the environment of the structure;
 - a processor coupled to the internode transceiver, the wireless network transceiver and the one or more sensors, the processor operable to exchange data with the internode transceiver, the wireless network transceiver and the one or more sensors devices coupled to the processor and process the data; and
 - a wide area network bridge coupled to the plurality of network nodes, the network bridge configured to receive data from the plurality of network nodes and pass information to a computer network for processing.
2. The system of claim 1 wherein the intermode transceiver of each node comprises a transceiver configured to communicate using a beam steered transmission.
3. The system of claim 1 wherein the intermode transceiver of each node comprises a transceiver configured to communicate using a beam switched transmission.
4. The system of claim 2 wherein the intermode transceiver is coupled to a phased array antenna configured to form the beam steered transmission.
5. The system of claim 3 wherein the intermode transceiver is coupled to multiple microwave horn antennas configured to form the beam switched transmission.
6. The system of claim 1 wherein the intermode transceiver is configured to transmit in the industrial, scientific and medical band.

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7. The system of claim 1 wherein the intermode transceiver is configured to transmit at 60 GHz.

8. The system of claim 1 wherein the wireless network transceiver comprises a transceiver that is 802.11 compliant.

9. The system of claim 1 wherein the one or more sensor includes an audio transducer.

10. The system of claim 9 wherein the audio transducer is coupled to a spotlight antenna for broadcasting audible transmission in a narrow footprint.

11. The system of claim 10 further comprising a first grouping of one or more nodes of the plurality of nodes and a second grouping of one or more nodes of the plurality of nodes, the first grouping configured to provide for the reception and transmission of audible communication and the second grouping configured to provide for the reception and transmission of audible communication, the first grouping of one or more nodes and the second grouping of one or more nodes together forming a virtual private speaker phone.

12. The system of claim 10 wherein different audible transmissions are broadcasted based on the location of the node.

13. The system of claim 1 wherein the intermode transceiver is configured to transfer information between each of the nodes in an ad-hoc fashion.

14. The system of claim 13 wherein the processor of each node of the network of nodes is configured to determine the ad-hoc transfer path based on the latency of the node and the latency of other nodes.

15. The system of claim 1 wherein the one or more sensors include a visual sensor configured to provide a visual record of an event in response to the receipt of a signal from at least one of the one or more plurality of nodes upon detection of the event by at least one of the sensor of the one or more sensors.

16. The system of claim 1 further comprising an RFID transceiver for interrogating RFID tags.

17. The system of claim 16 wherein the RFID transceiver is coupled to a SPOCK antenna to transmit and receive RF signals.

18. The system of claim 1 wherein the wide area network bridge is coupled to connect the network to the Internet.

19. The system of claim 1 further comprising one or more wireless devices configured to join the network of nodes to provide additional functionality.

20. The system of claim 19 wherein the wireless device is configured to route transmissions from one node of the network of nodes to another node of the network of nodes.

21. The system of claim 1 where a first node of the network of nodes is configured to utilize sensors on a second node of the network of nodes that is not available on the first node.

22. The system of claim 1 further comprising a computer having a wireless transmitter, the computer configured to integrate into the network of nodes.

23. The system of claim 1 further comprising a contactless power system operable to provide power to the nodes without the use of a wired connection.

24. A node for use in a communication and sensor network comprising:

- an internode transceiver for wireless communication between nodes;
- a wireless network transceiver for wireless communication with one or more wireless devices;
- one or more sensors for monitoring the environment of the structure; and
- a processor coupled to the internode transceiver, the wireless network transceiver and the one or more sensors, the processor operable to exchange data with the internode transceiver, the wireless network transceiver and the one or more sensors devices coupled to the processor and process the data.

25. The node of claim 24 wherein the internode transceiver is configured to communicate with the internode transceiver of another node using a beam steered transmission.

26. The node of claim 25 further comprising a phased array antenna configured to form the beam steered transmission.

27. The node of claim 25 further comprising a multiple horn antenna configured to form the beam steered transmission.

28. The node of claim 24 further comprising a multiple horn antenna configured to form a beam switched transmission.

29. The node of claim 26 wherein the internode transceiver is configured to transmit in the industrial, scientific and medical band.

30. The node of claim 26 wherein the internode transceiver is configured to transmit at 60 GHz.

31. The node of claim 24 wherein the wireless network transceiver comprises a transceiver that is 802.11 compliant.

32. The node of claim 24 wherein at least one of the one or more sensors includes an audio transducer.
33. The node of claim 32 wherein the audio transducer is coupled to a spotlight antenna to broadcast audible transmission in a narrow footprint.
34. The node of claim 33 wherein the node is part of a first grouping of one or more nodes and wherein there is a second grouping of one or more nodes, the first grouping configured to provide for the reception and transmission of audible communication and the second grouping configured to provide for the reception and transmission of audible communication, the first grouping of one or more nodes and the second grouping of one or more nodes together forming a virtual private speaker phone.
35. The node of claim 33 wherein different audible transmissions are broadcasted based on the location of the node.
36. The node of claim 24 wherein the node is part of a network of nodes configured to transfer information between each of the nodes in an ad-hoc fashion.
37. The node of claim 36 wherein the processor of each node of the network of nodes determines the ad-hoc transfer path based on the latency of the node and the latency of other nodes.
38. The node of claim 26 wherein the one or more sensors include a visual sensor for providing a visual record of an event, the visual sensor initiated by at least one of the one or more plurality of nodes detecting the event using another sensor of the one or more sensors.
39. The node of claim 24 further comprising an RFID transceiver configured to interrogate RFID tags.
40. The node of claim 39 wherein the RFID transceiver transmits and receives signals using a SPOCK antenna.

41. The node of claim 24 wherein the node is configured to receive power using a contactless power supply.
42. A system for sensory monitoring and processing comprising:
a plurality of nodes installed as a network, each of the plurality of nodes comprising:
an internode transceiver for wireless communication between nodes;
one or more sensors for monitoring the environment of the structure; and
a processor coupled to the internode transceiver, the wireless network transceiver
and the one or more sensors, the processor operable to exchange data with
the internode transceiver, the wireless network transceiver and the one or
more sensors devices coupled to the processor and process the data.
43. The system of claim 42 further comprising a wireless transceiver for communication between the node and a wireless device.
44. The system of claim 42 wherein the intermode transceiver of each node comprises a transceiver configured to communicate using a beam steered transmission.
45. The system of claim 42 wherein the intermode transceiver of each node comprises a transceiver configured to communicate using a beam switched transmission.
46. The system of claim 44 wherein the intermode transceiver is coupled to a phased array antenna configured to form the beam steered transmission.
47. The system of claim 45 wherein the intermode transceiver is coupled to multiple microwave horn antennas configured to form the beam switched transmission.
48. The system of claim 42 wherein the intermode transceiver is configured to transmit in the industrial, scientific and medical band.
49. The system of claim 42 wherein the intermode transceiver is configured to transmit at 60 GHz.

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50. The system of claim 43 wherein the wireless network transceiver comprises a transceiver that is 802.11 compliant.